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MAY 15 2002

TECH CENTER 1600/2900

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MAY 10 2002

TECH CENTER 1600/2900

<110> Hahn, Beatrice
Gao, Feng
Shaw, George

<120> CLONES AND SEQUENCES FOR NON-SUBTYPE B ISOLATES OF HUMAN
IMMUNODEFICIENCY VIRUS TYPE 1

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<141> 1999-11-02

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SEQ 1

RECEIVED

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TECH CENTER 1600/2900

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SEQ 16

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SEQ 22

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SEQ 23

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SEQ 24

104

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SEQ 25

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SEQ 26

106

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SEQ 27

10N

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SEQ 28

108

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SEQ 29

109

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SEQ 31

III

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SEQ 32

112

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<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR020; gene=gag

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SEQ 34

114

G

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<211> 2661
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
<223> isolate=93BR020; gene=rev

SEQ 36

116

6

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 <213> Human immunodeficiency virus type 1

<220>

SEQ 37

117

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<223> isolate=93BR020; gene=vpu

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<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR020; gene=env

<400> 18

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aattggtttg	acataaacaca	ctgggctgtgg	tatataaaaa	tattctataat	gagtagtagga	2040
ggcttgatag	gcttaagaat	agttttttact	gtgcttttcta	tagtaaatag	agttaggaag	2100
ggatactcac	ctttgtcatt	tcagacccat	atcccaagcc	cgaggggaacc	cgacaggccc	2160

SEQ 38

118

G

```

gaagggaatcg aagaaggagg tggagagcaa ggcaaagaca gatccgtgag attagtgacc 2220
ggattctttag ctcttgccctg ggacgacctg cggaacctgt gcctcttcag ctaccgccac 2280
ttgagagact tcatattaat tgcagcgagg attgtggaca gggggctgaa gaggggggtgg 2340
gaagctctca aatatctggg gaatctcaca cagtattggg gtcagggaact aaagaatagt 2400
gctattagct tgccttaatgc cacagcaata gcagtagctg agtgggacaga tagagttata 2460
gaagctttgc aaagagctgg tagagctatt ctcaacatac ctagaagaat aagacagggc 2520
ttggaagggg ctttgctata a 2541

```

```

<210> 19
<211> 27
<212> DNA
<213> Human immunodeficiency virus type 1

```

```

<220>
<223> isolate=93BR020; gene=nef

```

```

<400> 19
atgggtggca agtggtaaaa aagtagt 27

```

```

<210> 20
<211> 8
<212> DNA
<213> Human immunodeficiency virus type 1

```

```

<220>
<223> isolate=93BR020; gene=gag-pol fusion

```

```

<400> 20
aaaaaaaaa 8

```

```

<210> 21
<211> 207
<212> DNA
<213> Human immunodeficiency virus type 1

```

```

<220>
<223> isolate=92NG083; gene=gag

```

```

<400> 21
gtgggtgcga gagcgctcgt attaagcggg ggaataattag attcttggga aaaaattcgg 60
ttaaggccag ggggaaggaa aaagtataaa ctaaaacata tagtatgggc aagcagggaa 120
ctggggagat ttgcacttaa ccgtgacctt ttagaaacag cagaagggtg tgtgcaataa 180
atgaaacagt tgcaaccagc tctctag 207

```

```

<210> 22
<211> 2739
<212> DNA
<213> Human immunodeficiency virus type 1

```

```

<220>
<223> isolate=92NG083; gene=pol; note=NH2-terminus
uncertain

```

```

<400> 22

```

SEQ 39

119

6

ataaatttc	caggaaaaatg	gaaacacaaa	atgatagggg	gaattggagg	ttttatcaaa	60
gtaagacagt	atgatcaaat	acttatagaa	attggtggaa	aaaaggctat	agggacagta	120
ttagtaggac	ctacacctat	taacataatt	gggagaaaa	tgttgactca	gattggttgt	180
actttaaaag	ttccaataag	tcctattgaa	actgtaccag	taaaatbaaa	gccaggaaatg	240
gatggcccaa	gggtttaaaca	atggccattg	acagaagaga	aaataaaagc	attaacagaa	300
atttgaataa	acatggaaaa	ggaaggaaaa	atttcaaaaa	ttgggcctga	aaatccatat	360
aacactccaa	tattcgccat	aaagaaaaaa	gacagtacta	aatggagaaa	attggttagat	420
ttcagagaa	tttaataaa	aactcaagac	ttctggggagg	tccaattagg	aatacctcac	480
cccgcggggt	taaaaaagaa	aagatcagta	acgggtactag	atgtggggaga	tgcatacttt	540
tcagttccct	tagataaaaga	ctttagaaga	tatactgcac	tactataacc	tagtataaat	600
aatggagcac	cagggtattag	atatcaaatc	aattgtgttc	cacagggtat	gaaaggatca	660
ccagcaaat	ttcagagtag	catgacaaaa	atttttagagc	cttctagaac	aaaaaatcca	720
gaaatgggtg	ttcaccaata	catggatgat	ttatatgtag	gatctgactt	agaaataggg	780
cagcatagag	caaaaaataga	ggagttaaga	gaacatctac	tgaatggggg	attgaccaca	840
ccagataaaa	aacatcagaa	agaacctcca	ttcctttgga	tgggatatga	gctccatcct	900
gacaaatgga	cgggtacaacc	tatacagctg	ccagaaaagg	aagattggac	tgtcaatgat	960
atacaaaagt	tagtggggaaa	actaaattgg	gcaagtccaga	tttatccagg	gattaaagta	1020
aagccactat	gtagactcct	tagggggggcc	aaagcactaa	cagacatagt	acccttaacg	1080
gcagaagcag	aaatggagct	ggcagagaa	agggaaattc	taaaagaacc	tgtacatgta	1140
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tggacatatt	aaattttatca	agagccatc	aaaaatctaa	aaacaggaaa	atatgcaaaa	1260
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acatggggaag	tattggtggac	agagtactgg	caggccgcct	ggattctctga	gtgggagtgt	1440
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gcagaaactt	actatgtaga	tggggcagct	aataggggaga	caaaatttag	aaaggccagga	1560
gttgcctactg	acaaaggaaa	acaaaaaatt	attaccctaa	ctgaacacaa	aaacccaaag	1620
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agcaattgga	gagcaaatgg	tagtgatttt	aatctgccac	ctgtagtagc	aaaagaaata	1980
gtggccagct	gtgataatgc	tcaactaaaa	ggggaagcca	tgcattggaca	agtagactgt	2040
agtccaggaa	tatggcaatt	agattgtaca	catttagaag	gaaaaattat	catagtagca	2100
gttcatgtag	ccagtggtcta	tatagaagca	gaagttatcc	cagcagaaac	agggcaggaa	2160
acagcatact	ttatatataa	attagcagga	aggtggccag	taaaagtgtat	acatacagac	2220
aatggtcccca	attttcatcag	tgtctcagta	aaggcagcat	gttggtgggg	aatatccaca	2280
caggaatttg	gaattccctca	caatcccca	agccaaggag	tagtggaaatc	tatgaataag	2340
gaattaaaga	aaatcatcgg	acaggttgga	gatcaagctg	aacatcttaa	gacagcagta	2400
cagatggcag	tattcatcca	caatttttaa	agaaaaaggg	ggattggggg	gtacagtcca	2460
ggggaaagaa	taatatagacat	aatagcatca	gatatacaaa	ctaaagaact	acaaaaacaa	2520
attataaaaa	ttcaaaaaatt	tcgggtttat	tacaggggaca	gcagagaccc	aaattggaaa	2580
ggacagacaa	agctactctg	gaaaggtgaa	ggggcagtag	taataacagga	caataacgaa	2640
ataaaggtag	taccaagaag	aaaagcaaa	atccttaagg	attatggaaa	acagatggca	2700
ggtgggtgatt	gtgtggccag	tagacaggat	gaggattag			2739

<210> 23
 <211> 579
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> isolate=92NG083; gene=vif

SEQ 40

120

G

<400> 23
 atggaaaaaca gatggcaggt ggtgattgtg tggcaggtag acaggatgag gattagaaca 60
 tggaaacagtt tagtaaaaca tcataatgtat gtctcaaaga aagctaaagg ctgggttttat 120
 agacatcact atgaaagcag gcatccaaga gtaagttcag aagtacacat cccactaaga 180
 gatgtctaac tagtagtaag aacatattgg ggtctgcag caggagaaaa agactggcaa 240
 ttggggccatg ggggtttccat agaattggagg cagaaaaagat atagtagacaca aatagaccct 300
 aacacagcag accatctgat tcactctgat tattttgact gtttttcaga atctgccata 360
 agaaaaagcca tattaggaga gatagtttag cctaggtgtg aataccccagc agggacataat 420
 aaggttagat ctctacaata tctggcatcg aaagcattag taacaccaac aaggaaaaagg 480
 ccacctttgc caagtgttgg gaaattagca gaagatagat ggaacaagcc ccagaagacc 540
 agggaccaca gagagaaccc tacaatgaat ggacattag 579

<210> 24

<211> 291

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG083; gene=vpr

<400> 24

atggaacaag cccacagaaga ccaggggacca cagagagaac cctacaatga atggacatta 60
 gaactgttag aagagcttaa aaatgaagct gttagacatt ttccttaggcc ctggctccat 120
 ggcttaggac agtatatacta taacacctat ggggatactt ggggaaggagt tgaagccata 180
 atagaatac tacaacaact actgtttatc catcttcagaa tcgggtgcca acatagcaga 240
 ataggcatta ctccacagag aagagtaagg gatggaccgc gtgagcccta a 291

<210> 25

<211> 2597

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG083; gene=tat

<400> 25

atggaccggc tagaccctaa gctagagccc tgggaatcac cggggagatca gcctacaact 60
 cccgttaaca aatgttattg taaagtgtgc tgctggcatt gtcaagtttg ctttttaaac 120
 aaaggcttag gcatctccta tggcaggaag aagcggagac cccgacgagg aactcctcag 180
 ggcatgaagg atcatcaaaa cctgtacca aagcagtaag tagtaaccaat taatatatgt 240
 aatgcaggcc ttgaaaaat ctgactaata gtacatttca tagcagccac aattgtgtgg 300
 agtatagtat ttatagaata tagaaaaata agaaaacaga aaaaaataga aaagtactt 360
 gatagataaa gagaaagagc agaagacagt ggaatgaga gtgaagggga tacagaggaa 420
 ttggcaaac ttatggaat gggggacttt gatccttggg ttggtaataa tttgtagtgc 480
 ctacataac ttgtgggtca cagtctatta tggggtagct gtgtgggaag atgcagatac 540
 ccccttattc tgtgcctctg atgtcaaatc atatatgtct gaaaaacata atgtctgggc 600
 tacacatgcc tgtgtaccca cagaccctaa cccacaagaa atagctatag aaaatgtaac 660
 agaaaaat tttt aacatgtgga agaataacat ggtagaacag atgcaggagg atataatcag 720
 tttatgggag gaaagcctaa agccatgtgt aaagctaact cctctctgta tcaactttaaa 780
 ctgtactaac gtaaacagtg ctaatcatac tgaggccaat aacactgtag aaaacaaga 840
 agaaaataaa aactgtctct tcaagataac cacagaaagg ggagggaaga agaaggaaga 900
 ataccgcgtc ttctataaac ttgatgtgtg accaattagt aatgggaata agactagtta 960
 taggctaata cattgtaatg tctcaaccat taacaggctg tgtccaaagg taaattttga 1020

SEQ 41

121

6

```

cccaattccc atacattatt gtgctccagc tgggtttgag attttaaagt gtagggataa 1080
ggagtacaat ggaacaggag catgtaaaaa tgtcagtaca gtacaagtga cacatggaat 1140
taagccagtg gtatcaactc aactactgct gaattggcagt ttacagagaag aagatataag 1200
aattagatct gaaaatttca cagacaatac caaagtcata atagtgagcag ttaataatag 1260
tatagaaatt aatttgtatca gacccaataa caatacaaga aaaagtatac caatcgagacc 1320
aggacaagcg ttctatgtcaa cagggtgat atagaggagac cacattgtaa 1380
tgttagtaga ataaaatgga gggagatgtt aaagaatgtc acagcacagc taaggaaaaat 1440
ctataataat aagaacataa cctttaactc atctcgagga ggggacctag aaattacaac 1500
acatagtttc aattgttagag gagagttttt ctattgcaat acatcaggac tgtttaataa 1560
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ctgcaccact aatgtgacct ggaacactag ttggagtaat aaactctata atgagatttg 2220
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cagcctgtat gaagaatcgc agaaccagca ggaaaaagat gaacaagact tatggcatt 2340
ggacaagtgg gcaagtttgt ggaatttgtt tgacatatca aattggctat ggtatataag 2400
aatattcata atgatagtag gaggtttaat aggtttaaga atagtttttg ctgtgtcttc 2460
tatagttaag aagatttagc agggatactc acctttgtcg tccagacacc taaccatca 2520
ccagcgggaa cccgacagcg tcggaaaaac cgaagaagga ggtggcgagc aagacagaga 2580
cagatccact cgattag

```

<210> 26
<211> 2663
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
<223> isolate=92NG083; gene=rev

```

<400> 26
atggcaggaa gaagcggaga ccccgacgag gaactcctca gggcagtaag gatcatcaaa 60
accctgtacc aaagcagtaa gtagtacaa ttaatatatg taatgcagcg cttagaataa 120
tctgactaat agtagcattc atagcagcca caatttgtgt gagtatagta tttatagaat 180
atagaaaaat aagaaaacag aaaaaaatag aaaagtact tgatagaata agagaagaag 240
cagaagacag ttgaaatgag agtgaagggg atacagagga attggaacca cttatggaaa 300
tgggggactt tgatcctcg gttggttaata atttgtagt cctcagataa cttgtgggtc 360
acagtctatt atggggatc tgtgtgggaa gatgcagata gattgcctat ctgtgctctc 420
gatgtctaat catatagtcc tgaaaaaacat aatgtctggg ctacacatgc ctgtgtaccc 480
acagacccta accccaaga aatagctata gaaaatgtaa cagaaaattt taacatgtgg 540
aagaaataca ttgtagaaca gatgcaggag gatataatca gtttatggga ggaaagccca 600
aagccatgtg taaagctaac tctctctgt atcactttaa actgtactaa tgtaaacagt 660
gctaatacata ctgaggccaa taacactgta gaaaacaaag aagaataaaa aaactgctc 720
ttcagataa ccacagaaag gggaggcaag aagaaggaag aatcgcgcgt ttctataaaa 780
cttgatgtgg taccaaatag taatgggaat aagactagtt ataggctaat acattgtaat 840
gtctcaacca ttaaacaggc ttgtccaaag gtaaattttg acccaattcc catacattat 900
tgtgtccag tgaggttttg gattttaaa gtagggata aggagaccc tgtaacagga 960
ccatgtaaaa atgtcagtag agtacaattg acacatggaa ttaagccagt ggtatcaact 1020

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SEQ 42

122

G

```

caactactgc tgaatggcag tttagcagaa gaagatataa gaattagatc tgaaaatttc 1080
acagacaata ccaaaagtcac aatagtcgag cttaataata gtatagaatc taattgtatc 1140
agaccacaata acaatacaag aaaaagtata ccaatcggac caggacaagc gttctatgca 1200
acagggtgata taataggaga cataagacaa gcacattgta atgttagtag aataaaattg 1260
agggagatgt taaagaatgt cacagcacag ctaaggaaaaa tctataataa taagaacata 1320
acctttaact catctgcagg aggggaccta gaaattacaa cacatagttt caattgtaga 1380
ggagagatgtt tctattgcaa tacatcagga ctgtttaata ataattattg taattattat 1440
aatgagagata tcacactccc atgtaaaaata aaacaaattg tgaggatgtg gcagaaagtg 1500
ggacaagcaa tgtatgcctt tcccatcgca ggaaaccttg tatgtaaatc aaacattaca 1560
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cagggatact cactttgtc gttccagacc ctaccacc accagcggga acccgacagg 2400
ctcgaaaaaa ccgaagaagg aggtggcgag caagacagag acgatccac tcgattagtg 2460
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cgcttgaggg acttagtctt gattgcagca aggacggtgg aacttctggg acgcagcagc 2580
ctcaagggac tgagactggg gtgggaaggc ctcaagtact tgtggaacct cctgttgtat 2640
tggggtcggg aactaaagaa tag 2663

```

```

<210> 27
<211> 26
<212> DNA
<213> Human immunodeficiency virus type 1

```

```

<220>
<223> isolate=92NG083; gene=vpu (defective); note=10 bp
deletion early in vpu frameshifts, results in
premature termination

```

```

<400> 27
tgccagcctt agaaatatct gactaa 26

```

```

<210> 28
<211> 2550
<212> DNA
<213> Human immunodeficiency virus type 1

```

```

<220>
<223> isolate=92NG083; gene=env

```

```

<400> 28
atgagagtga aggggataca gaggaattgg caacacttat ggaatgggg gactttgatc 60
ctggggttgg taataatttg tagtgcctca gataacttgt gggtcacagt ctattatggg 120
gtacctgtgt gggaagatgc agataccccc ctattctgtg cctctgatgc taaatcatal 180

```

SEQ 43

123

6

```

agtcttgaaaa aacataatgt ctgggctaca catgcctgtg taccacaga ccctaaccce 240
caagaatatag ctatagaaaa tgtaacagaa aattttaaca tgtgggaaga taacatggta 300
gaacagatgc aggaggatat aatcagttta tgggaggaaa gcctaaagcc atgtgtaaag 360
ctaacctctc tctgtatcac tttaaactgt actaatgtaa acagtgtctaa tcatactgag 420
gccaataaca ctgtagaaaa caaagaagaa ataaaaaact gctctttcaa gataaccaca 480
gaaaggggag gcaagaagaa ggaagaatac gcgcttttct ataaacttga tgtgtgtaca 540
attagtaatg ggaataagac tagttatagg ctaatacatt gtaatgtctc aaccattaaa 600
caggcttgtc caaaggtaaa ttttgaccac attcccatatc attattgtgc tccagctggg 660
tttgcgattt taaagtgtag ggataaggag tacaatggaa caggaccatg taaaaatgtc 720
agtacagtac aatgtacaca tgggaattaa ccagtggtat caactcaact actcgtgaat 780
ggcagttttag cagaagaaga tataagaatt agtctgtaaa atttcacaga caataccaaa 840
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acaagaaaaa gtataccaat cggaccagga caagcgttct atgcaacagg tgatataata 960
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gcaggagggg acctagaaat tacaacacat agtttcaatt gttagggaga gtttttctat 1140
tgcaatcatc caggactgtt taataataat attagtaata ttaataatga gactatcaca 1200
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gcccttccca tcgcagaaaa ccttgtatgt aaatcaaaaa tcacagattt aatattaaca 1320
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atgagggaca attggagaag tgaattatat aagtataaaa cagtaaaaaa caaatccta 1440
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agtataaatt cttataatga gatttgggat aacatgactt ggctagaatg ggaaggggaa 1860
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aagaatgaac aagacttatt ggcatgggac aagttggcaa gtttgtgaa ttgggttgac 1980
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ttgtcgttcc agaccctaac ccataccagg cgggaaccgg acaggctcgg aaaaaccgaa 2160
gaaggagggt gcgagcaaga cagagacaga tccaactcgt tagtgacgg attcttagcg 2220
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gtcttgattg cagcaaggac ggtggaactt ctgggacgca gcagcctcaa gggactgaga 2340
ctggggtggg aaggcctcaa gtacttgtgg aacctctgtg tgattgggg tcgggaacta 2400
aagaatagtg ctataaattt gcttgataca atagcaatag caacagctaa cgggacagat 2460
agggttatag aagtagcaca aagagcttat agagctattc tcaacgtacc tacaaggata 2520
agacaaggct tagaaagagc tttgctataa 2550

```

```

<210> 29
<211> 1503
<212> DNA
<213> Human immunodeficiency virus type 1

```

```

<220>
<223> isolate=90CR056; gene=gag; CDS:
      join(137..1434,1434..4443)

```

```

<400> 29
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ctaagccag ggggaagaa aaaaatagc ctaaaacatc tagtatggg cagcaggag 120
ctggaaagat ttgcacttaa ccccgccctt ttagaacac cagaaggctg tctacagata 180

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SEQ 44

124

G

atagaacaga tacagccagc tattaagaca ggaacagaag aacttaaatc attatttaat 240
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 ttgataaga tagaggaat acaaaacaaa agtcagcaaa aaacacagca agcagcagct 360
 gataaggaaa aagacaacaa ggctcagtaa aattatccta tagtacagaa tgctcaagg 420
 cagatggctac accaggccat atcacctagg accttaaatg catgggttaa agtagtagaa 480
 gaaaaggctt ttagcccaga agtaataccc atgttttcag cattatcaga aggagccacc 540
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 ttaaaagata caatcaatga ggaagctgca gaatgggaca gggtacatcc agtgcagatg 660
 gggcctattc caccaggcca aatgagagaa ccaaggggaa gcgatatagc aggaactact 720
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 gacaagagct tcgggttcgg agaggagatg acccctctc cgaagcagga gcagctgaag 1440
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<210> 30

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

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 agacatcatt ttgaaagcac tcatccaagg ataagttcag aagtacacat cccattagga 180
 gaagctaggt tagtcataac cacatactgg ggtctgaata caggagaaaag aagatggcat 240
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 ggctggcagg acccaactaat tcatatgcac tattttgatt gttttcaga atctgcata 360
 aggaaaagcca tattaggacg ttagttagga cctaggtgta actatccagc aggacataaa 420
 caggtaggaa ctctacaata cttggcatta acagcattag tggcaccaaa aagatataag 480
 ccacctttgc ctagtgttag aaagctagta gaggatagat ggaacaagcc ccagaagacc 540
 aggggccaca gaggagacca cacaatgaat ggacactag 579

<210> 31

<211> 291

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=vpr

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SEQ 45

125

6

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 ataagaacgc tgcaacaact actgtttatt catttcagaa ttgggtgcc aacatagcaga 240
 ataggaaatta ctgcagacag aagagtaaga aatggaccce gtatagctcta a 291

<210> 32
 <211> 624
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> isolate=92NG083; gene=nef

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 ggagcaatca caagcagcaa tacagcaacc aacaatcctg attgtgctgt gctggaaaga 180
 caagaggagg actcagatgt aggttttccg gtcagaccac aggtaccttt gagaccaatg 240
 acttataagg ctgcttttga tctcagcttc tttttaaag aaaagggggg actggatggg 300
 ctaatttact ccaagagaag acaagacatc cttgatctat ggggtctataa tacacaagga 360
 ttcttccagc attggcagaa ctacacacca gggccaggga ctagaactccc actgaccttt 420
 ggggtgggtct tcaaaactagt accaatggac ccagcagaga tagaggaagc caataaggga 480
 gagaacatca gtctattaca ccccatctgc cagcatggaa tggaggatga acacagagaa 540
 gtgctgggat ggagatttaa cagtgcgcta gcacggagac acctagcccc agagctgcac 600
 ccggagtact acaaaagactg ctga 624

<210> 33
 <211> 2606
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> isolate=90CR056; gene=tat; CDS: join (5177..5391,
 7698..7782)

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 aaaggcttag gaatttccta tggcaggaag aagcggagcc agcgacacag aactcctgca 180
 agtttgcaag atcatcaaaa ttctatatca aagcagtaag tattatcata aatgtatata 240
 taggatttag gaataggagc gctagtagta acatttatca tagccgtaat tgtgtggacc 300
 atagtatata tagaatataa aaaattggta aggcaaaaga aaatagacag gctaattgaa 360
 agaattaggc aaagagcaga agacagtggc aacgagagtg atggagacac agaggaaata 420
 tccaagctta tggagatggg gcaccttaat ctggggtatg ttgctgatct gtagtgtctc 480
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 atgggatcaa agcttgaaac catgtgtaaa attaacccca ctctgtgtta ctctaaactg 780
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 aacaaattgt tctttcaatg taactacagt actaagatg aagcagcaga aagtacatgc 900
 actcttttat agacttgatg tagtaccatg tgataacaat agtactcagt ataggctaag 960
 aaattgtaat accctcagca ttacacaggc ttgcccaag gtgtcctttg aacctattcc 1020
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SEQ 46

126

G

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taaaaaatatc	tcagacaata	ccaaaaacat	aatagtacag	cttaagacac	cagtaaacat	1260
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catccaagga	aacatttatgt	gtgtatcaaa	tattacagga	ctaatttga	caattgacga	1740
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gctgtgttat	ataaaaatat	tcataatgat	agtaggaggt	ttaaataggtt	taagaataat	2460
ttttgctgtg	ctttctatag	taaatagagt	taggcaggga	tactcacctt	tgtcttttca	2520
gacctctgtc	ccgaaccac	ggggaccgga	caggcccgaa	ggaaacagaag	aaggagggtg	2580
cgagcaagac	agagacagat	ccgtga				2606

<210> 34

<211> 2657

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=rev; CDS: join(5316..5391,
7698..7972)

<400> 34

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cgctagtagt	aacattttatc	atagccgtaa	tgtgtgggac	catagttat	ataagaata	180
aaaaattggt	aggcgaagaag	aaaatagaca	ggtaattga	agaataggga	gaagagcag	240
aagacagtgg	caacgagagt	gatggagaca	cagaggaatt	atccaagctt	atggagatgg	300
ggcaccttaa	tcttgggtat	gttgctgac	tgtagtctg	cacaaaaact	gtgggttaca	360
gtatatatg	gggtacctgt	gtggaaagag	gcacaaaacca	ctctattctg	tgcatcagat	420
gctaaggcat	atgagacaga	aaagcataat	gtctgggcta	catatgcag	tgtaaccaca	480
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ccatgtgtaa	aattaacccc	actctgtgtt	actctaaact	gtactaatgt	cagaaacatt	660
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attacacagg	cttggccaaa	gggtgtcctt	gaacctatc	ccatacatta	ttgtgtccca	900
gctggtcttg	cgattctaaa	gtgtaacaat	aaaacattca	atggacacag	attatgtaca	960
aatgtcagta	cagtacaatg	tacacatgga	attagaccag	tgtgtatcaac	tcaactgcta	1020

SEQ 47

127

6

ttaaatggaa	gcctagcaga	agaacagatc	ataattagaa	ctaaaaatat	ctcagacaat	1080
acaaaaaaca	taatatgtaca	gcttaagaca	ccagtaaaca	ttacatgtac	caggcctaac	1140
aataatacga	gaacaagtat	acatttaggg	ccaggacgag	cattctatgc	aacaggtgac	1200
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ttctattgca	atacatcagg	gctgtttaat	agtagttggg	aaatgcatac	taattacaca	1440
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caggaaactaa	agaatag					2657

<210> 35

<211> 243

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=vpu

<400> 35

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ctaatttgaaa	gaataggaga	aagagcagaa	gacagtggca	acgagagtga	tggagacaca	180
gaggaaattat	ccaagcttat	ggagatgggg	caccttaatc	ttgggtatgt	tgctgatctg	240
tag						243

<210> 36

<211> 2538

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=env

<400> 36

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SEQ 48

128

G

ttgctgatct	gtagtctgtc	acaaaacttg	tgggttacag	tatatattgg	ggtagctgtg	120
tggaagagg	caaaaaccac	tctattctgt	gcattcagatg	ctaaggcata	tgagacagaa	180
aagcataatg	tctgggctac	acatgcgatg	gtaccacagc	accccaacc	acaagagatg	240
gtcatggaga	atgtaacaga	gagctttaat	atgtgggaaa	ataacatggt	ggagcagatg	300
catcacagaca	taatcagttt	atgggatacaa	agcttgaaac	catgtgttaa	attaacccca	360
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gaaaacatta	cactgcccag	cagaataaaa	caaattgtta	acatgtggca	gagagttaga	1260
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atagtgc	gagcttggag	agctattctc	cacataccta	gaagaataag	acagggcttt	2520
gaaagaagct	tgctataa					2538

<210> 37

<211> 621

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=nef

<400> 37

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aggcgagctg	aaccagtagc	agaaggggta	ggagcagctg	ctcgagatt	ggatagacgc	120

SEQ 49

129

Q

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 caagaggacg gggaggaagt aggcctttcca gtcaggcctc aggtaccttt aagaccaatg 240
 acctataaag gagccttttga tctcagccat tttttaaaag aaaagggggg acctgtaggg 300
 ttaatttact ccaagcaaaag acaggacatc ctgtatttat ggggtctataa cacacaaggg 360
 tacttccctg actggcagaa ctacacacca gggccagggg agagatttcc cctgaccttt 420
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 gagaacaaca gcttgcatac ccccatgagc ctgcatggaa tggaggatga cgggagagaa 540
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 ccggagtaca aagactgctg a 621

<210> 38
 <211> 1486
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> isolate=92RW009; gene=gag

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 cgtggaaaga ttgacactta accctgacct tttagagaca ccagaaggct gtaaacaaat 180
 aatgagacag ctgcaaccag ctcttcagac aggaacagat gaacttaggt cattataaa 240
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<210> 39
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 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> isolate=92RW009; gene=vif

<400> 39

130 G

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 agacatcatt attgaaagcag acatccaaaa ataagttcag aagtacacat cccattaggg 180
 gaagctagat tagtaataaaa aacatatgtg ggtttgc aaa caggggaaag agattggcat 240
 ttgggtcatg gagtctccat agaattggaga ttgagaagat ataagacaca agtagaccct 300
 ggctggcag gccaaactaat ccataatgcat tattttgatt gttttgcaga ctctgccata 360
 aggaaagcca tattaggaca tatagttagc cctaggtgtg actatcaagc aggcataat 420
 aaggtaggat cctcacaata cttggcactg acagcattga taaaacaaaa aaagataaag 480
 ccacctctgc ctagtgttag taaattagta gaggataaat ggaacaagcc ccagaagacc 540
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<210> 40

<211> 291

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=vpr

<400> 40

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 gacttaggac aatataatcta tgaacccat ggggatactt ggaggggagc agaagctata 180
 ataagaattc tgcaacaact actgtttatc catctcagaa ttgggtgccc catagacaga 240
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<210> 41

<211> 2640

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=tat

<400> 41

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 aaaggcttag gcatttccta tggcaggaag aagcggagac agcgacgaaa cgctccctca 180
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 ttctaaagtg taaagataaa aagttcaatg gaacagggcc atgcaagaat gtcagcacag 1140

SEQ 51

131

6

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tagtacaact	taacgagact	gtacaaatta	attgttccag	acctaacaac	aatacagaag	1320
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gcacagaatt	aaatataaca	ctcccatgca	gaataaagca	aattataaat	atgtggcaga	1680
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<210> 42

<211> 2658

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=rev

<400> 42

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cttgtggggg	tggggaacta	tgatcttggg	gatgttaaca	atttgtagt	ctgcacaaac	360
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caagccagta	gtatcaactc	agctgctgtt	aatggcagtc	ctagcagata	aagagataat	1080
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SEQ 52

132

Q

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<210> 43

<211> 246

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=vpu

<400> 43

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aggttaacta	agaaaaataa	agaaagagca	gaagatagtg	gcaatgagag	tgaatgggag	180
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<210> 44

<211> 2583

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=env

<400> 44

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ttggggattg	taacaatttg	tagtgcctga	aacaacttgt	gggttactgt	ctactatggg	120
gtacctgtgt	ggaagacgc	agagaccacc	ttattttgtg	catcagatgc	taaagcatat	180

SEQ 53

133

67

gattccagaaa	agcataatgt	ctgggctaca	catgctgtg	tacccataga	ccccgaccca	240
caagaaatca	atttggaaaa	tgtgacagaa	gagtttaaca	tgtggaaaaa	taacatggta	300
gagcagatgc	atacagatat	aatcagttct	tgggacccaa	gccataagcc	atgtgtaaag	360
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<210> 45

<211> 624

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=nef

<400> 45

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ggggcactta	caagtagcaa	cacaccagcg	aacaatgctg	attgtgcctg	gctggcagca	180

SEQ 54

134

9

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caagaggagg aaaacgaagt aggttttcca gtcagacctc aggtgccttt aagaccaatg 240
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ttaaattact ctaagaaaaa gcaagacatc ctggatttgt gggtctataa cacacaaggc 360
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<210> 46

<211> 8

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; standard name=3' LTR repeat region; note=3' R repeat should end one base beyond end of this

<400> 46

aaaaaaaa

8

<210> 47

<211> 1494

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=gag

<400> 47

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SEQ 55

135

9

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<210> 48
<211> 4307
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
<223> isolate=92NG003; gene=gag-pol fusion

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SEQ 56

134

G

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<210> 49

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

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<210> 50

<211> 114

<212> DNA

SEQ 57

137

G

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=vpr

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<210> 51

<211> 2579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=tat

<400> 51

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SEQ 58

138

6

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<210> 52

<211> 2645

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=rev

<400> 52

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SEQ 59

139

G


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<210> 55
<211> 621
<212> DNA
<213> Human immunodeficiency virus type 1

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<220>
<223> isolate=92NG003; gene=nef

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gcaatcacia  gcagcaatac  agcacaactc  aatcctgatt  gtgcctggct  agaagcacia  180
caggagaatt  cagaggtagg  ctttccagtc  agacaacagg  tacctttgag  accaatgact  240
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<210> 56
<211> 1438
<212> DNA
<213> Human immunodeficiency virus type 1

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<220>
<223> isolate=93BR029; gene=gag

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SEQ 61

141

G

gctagaacga	ttcgcagtta	atcctggcct	tttagagaca	tcagaaggct	gtagacaaa	180
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tacagttagca	accctctatt	gtgtacatca	aaagatagat	gtaaaagaca	ccaaggaagc	300
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<210> 57

<211> 3012

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=pol; note=NH2-terminus
uncertain

<400> 57

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SEQ 62

142

G

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<210> 58

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=vif

<400> 58

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agacatcaat	tgtaaaagcag	gcatccaaga	gtaagttcag	aagtacatat	cccactagag	180
gaagctcaat	tagtaataac	aacatattgg	gggctgcata	caggagaaaag	agattggcat	240
ctgggtcagg	gagttctcat	agaatggagg	cagggggagg	ataggacaca	aatagaccct	300
ggcctggcag	accaactgat	ccatatatat	tattttgatt	gtttttcaga	atctgccata	360
aggaaaagcca	tattaggaca	tagaattagc	cctaggtgtg	attataaagc	aggacataac	420
aaggtaggat	ctctacagta	cttggcacta	acagcattaa	taaaaccaaa	aaagagaaaag	480
ccacctttgc	ccagttgtta	gaaactgaca	gaggatagat	ggaacaaagg	ccagaagacc	540
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<210> 59

<211> 291

<212> DNA

SEQ 53

143

7

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=vpr

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ataagaattc	tgcaacaact	gctgtttatt	catcttcagaa	cttgatgtca	acatagcaga	240
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<210> 60

<211> 2601

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=tat

<400> 60

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agggcaaaa	acaagtgtgt	aagagagaaa	aaagcagcgt	gggaattgga	gctttgttcc	1920
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SEQ 64

144

G


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<210> 61

<211> 2652

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=rev

<400> 61

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SEQ 65

145

6

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<210> 62

<211> 2529

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=env

<400> 62

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SEQ 66

146

6

aagaatgaac	aagaattatt	ggcattggac	aatggggcaa	gtctgtggaa	ttggtttgac	1980
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<210> 63

<211> 621

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=nef

<400> 63

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ggggcaatta	caagcagcaa	tactggagct	aataatcctg	acttggcctg	gctggaggca	180
caagagggaag	aggaagttagg	ctttccagtc	agacctcagg	tacctttaa	accaatgact	240
tataaggggag	ctcttgatct	cagtcacttt	ttaaagaaaa	aggggggact	ggaaagggta	300
atttattcca	agaaaagaca	agagatcctt	gatctgtggg	tttaccacac	acaaggctac	360
ttccctgatt	ggcagaacta	cacaccaggg	ccaggggcca	gatatccact	gaccttaggg	420
tggtgcttca	agctagtacc	agttgaccca	gaggaggtag	aaaaggccaa	tgaaggagag	480
aacaactgct	tgctacaccc	catgagccaa	catggaatgg	aggatgaaga	cagagaaata	540
ctgcagtgga	ggtttgacag	ccgcctagca	tttcatcaca	tggcccgcaga	gctgcatccg	600
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<210> 64

<211> 1503

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY032.3; gene=gag

<400> 64

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ttggaaagat	tcgcacttta	ccctggcctt	ttgaaacag	cagaaggatg	tcaacaatta	180
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gaaaaggctt	tcagcccaga	agtaataacc	atgtttctag	catattcaga	gggagccacc	540
ccacaagatt	tgaacatgat	gctaaatata	gtggggggac	accaggcagc	aatgcaaatg	600
ttaaaagata	ccatcaatga	ggaagctgca	gactgggaca	ggacacatcc	agtaatgca	660
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SEQ 67

147

6

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 <211> 3009
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
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acaggagcag	atgatacagt	attagaagaa	ataaatttgc	caggaaaatg	gaagccaaaa	300
atgatagggg	gaatcggagg	ttttatcaaa	gtaagacaat	atgatcagat	acctatagaa	360
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SEQ 68

148

G

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<210> 66

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CT032.3; gene=vif

<400> 66

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<210> 67

<211> 288

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY032.3; gene=vpr

<400> 67

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SEQ 69

149

9

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<210> 68
<211> 2643
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
<223> isolate=94CT032.3; gene=tat

<400> 68
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SEQ 70

150

6

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<210> 69

<211> 2688

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CT032.3; gene=rev

<400> 69

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SEQ 71

151

Q

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<210> 70
 <211> 246
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> isolate=94CT032.3; gene=vpu

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<210> 71
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 <213> Human immunodeficiency virus type 1

<220>
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 <211> 660
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> nef

<400> 72						
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 <212> DNA
 <213> Human immunodeficiency virus type 1

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<400> 73						
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SEQ 73

153

6

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<211> 3000

<212> DNA

<213> Human immunodeficiency virus type 1

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<223> isolate=962M651.8; gene=pol

<400> 74

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SEQ 74

154

6

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<210> 75

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=vif

<400> 75

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 aaggtaggat ctctgcgaata cttggcactg acagcattga taaaacacaaa aaagagaaaag 480
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<210> 76

<211> 291

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=vpr

SEQ 75

155 6

<400> 76
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<210> 77
 <211> 2666
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> isolate=96ZM651.8; gene=tat

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SEQ 76

156 6

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<210> 78

<211> 2684

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=962M651.8; gene=rev

<400> 78

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SEQ 77

157

67

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 <213> Human immunodeficiency virus type 1

<220>
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158

G

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<210> 81
 <211> 621
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> nef

<400> 81		
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<210> 82
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 <213> Human immunodeficiency virus type 1

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159

67

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<210> 83
<211> 3017
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
<223> isolate=96AM751.3; gene=pol

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SEQ 80

1600

G

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<210> 84

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM751.3; gene=vif

<400> 84

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SEQ 81

1401

6

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<211> 291
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
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<212> DNA
<213> Human immunodeficiency virus type 1

<220>
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SEQ 82

1102

Q

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<210> 87

<211> 2631

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM751.3; gene=rev

<400> 87

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gtagatttata	gaataggagt	aggagcatta	atagcagcac	taatatacag	aatagctgtg	180
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gaattggcaa	caatgtgtgga	tatgggggcat	cttaggcttt	tggatgctat	tgatgtgtaa	360
tgcaatgggg	aaattgttggg	tcacagctcta	ctatggggta	cctgtgtgga	aagaagcaaa	420
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SEQ 83

163

G

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<210> 88

<211> 261

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96AM751.3; gene=vpu

<400> 88

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caaaagaaaa	tagaccggtt	aattaaaaga	attagagaaa	gggcagaa	cagtggaat	180
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<210> 89

<211> 2544

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96AM751.3; gene=env

<400> 89

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gatatatgac	caattaatga	gaattccagt	gaatatagat	taataaatgt	taataacctg	600
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SEQ 84

1164 6

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<210> 90

<211> 624

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96AM751.3; gene=nef

<400> 90

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<210> 91

<211> 1491

<212> DNA

SEQ 85

1605

6

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=gag

<400> 91

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<210> 92

<211> 3012

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=pol

<400> 92

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SEQ 86

1604 6

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<210> 93

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=vif

<400> 93

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SEQ 87

147

8

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<210> 94
<211> 291
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
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<400> 94
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<210> 95
<211> 2655
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
<223> isolate=94CY017.41; gene=tat

<400> 95
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SEQ 88

168

67

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<210> 96

<211> 2721

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=rev

<400> 96

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SEQ 89

169

6

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<210> 97

<211> 246

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=vpu

<400> 97

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<210> 98

<211> 2598

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=env

<400> 98

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ccgtgtgtga	aagatgcaga	taccatccta	ttttgtgcat	ccagatgctaa	agcatatgat	180
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gaaataaac	tggaaaaatg	aaacagaaaa	tttaatatgt	ggaaaaataa	catggtagag	300
cagatgcaag	aaagataaat	cagctttatg	gatcaaaagg	taaaagccat	tgtaaaatta	360
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SEQ 90

170

67

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<210> 99

<211> 654

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=nef

<400> 99

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ttttttaaa	aaaagggggg	actggatggg	ttattttact	ccagaaaaag	acaagaacac	360
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SEQ 91

171

Q

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<210> 100
<211> 1476
<212> DNA
<213> Human immunodeficiency virus type 1

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<220>
<223> isolate=94IN476.104; gene=gag

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<210> 101
<211> 3011
<212> DNA
<213> Human immunodeficiency virus type 1

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<220>
<223> isolate=94IN476.104; gene=pol

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ccccctgtct caataaaagt agggggccag ataaaggaa gctctctaga cacagagcca 240
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SEQ 92

172

G

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tgcattggaca	agtagaccgt	agcccaggga	tatggcaatt	agattgtaca	cagtagaagt	2340
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tcaaagtta	acatacagac	aatggtagta	atttcaccag	tgctgcagtt	aaggcagcct	2520
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tagtagaata	catgaaataa	gaattaaaga	aaattatagg	gcaggttaaga	gaacacagctg	2640
agcaccttaa	gacagcagta	caaatggcag	tattcattca	caatttttaa	agaaaagggg	2700
ggaattgggg	gtacagtgca	ggggaaaagaa	caatagacat	aatagcaaca	gacatacaaa	2760
ctaaagaatt	acaaaaccaa	attacaaaaa	ttcaaaattt	tcgggtttat	tacagagaca	2820
gcagagaccc	cattttggaaa	ggaccagcca	aactgctctg	gaaaggtgaa	ggggcagtag	2880
taatacaaga	taatatgtgac	ataaaggtag	tgccaaggag	gaaagcaaaa	attattaggg	2940
attatggaaa	acagatggca	ggtgctgatt	gtgtggcagg	tagacaggat	gagggatcaga	3000
acatggaata	g					3011

<210> 102
 <211> 579
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> isolate=94IN476.104; gene=vif

SEQ 93

173

9

<400> 102
atggaaaaca gatggcaggt gctgattgtg tggcaggtag acaggatgag gatcagaaca 60
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agacatcatt atgaaagcag acatccaaaa gtaagtgcag aagtacacat cccatttagga 180
gatgctagat tagtaataaa aacatattgg gggttacaaa caggagaaag agattggcat 240
ttgggtcatg gcgtctccat agaattggaga ttgggaagat ataggacaca agtagaacct 300
ggcctggcag accagctaat ccatatgcat tattttgatt gttttgcaga ctctgccata 360
agaaaaagcca tattaggaca catagtattt tctagggtgtg attatcaagc aggacataat 420
aaggtaggat ctctacaata cttggcactg acagcattga taaaaccaa aaagagaaag 480
ccacctctgc ctagtgttaa gaaattagta gaggatagat ggaacaatcc ccagaagacc 540
agggaccaca gagggaacca tacaatgaat ggacactag 579

<210> 103
<211> 291
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
<223> isolate=94IN476.104; gene=vpr

<400> 103
atggaacaat ccccaagaaga ccagggacca cagaggggaac catacaatga atggacacta 60
gagcttctag aggaactcaa gcaggaagct gtcagacact ttcttagacc ttagcttcat 120
agcttaggac aatatatcta tgaaacatat ggggatgctt ggacaggagt cgaagcttta 180
ataagaacac tgcaacaatt actgtttatt catttcagaa ttgggtgccg gcatagcaga 240
ataggcattt tacaacggag aagagcaaga aatggagcca gtatagctta a 291

<210> 104
<211> 2633
<212> DNA
<213> Human immunodeficiency virus type 1

<220>
<223> isolate=94IN476.104; gene=tat

<400> 104
atggagccag tagatcctaa cctagagccc tgggaaccac caggaagtca gcctaaaaact 60
gcttgtaata ctgcttatgt taaacactgt agctaccatt gtctagtttg ctttcagaca 120
aaaggcttag gcatttccta tggcaggaag aagcggagac agcgagcagc cgctcctcca 180
agcagtggag atcatcaaaa tcttatatca aagcagtaag tatatgtaat ggtgaattta 240
ttagaagaag tagattatag attaggagta ggagcattaa tagtagcatt aatcttagca 300
ataattgtgt ggaccatagc atattctagaa tataggaaat tgtaaagaca aagaaaaata 360
aacaggttaa ttgaaagaat tagggaaaga gtagaagaca gtggcaatga gagtggaggg 420
gatactgagg aattgtcaac actggtggat atggggaatc ttaggctttt ggatgctaata 480
gatttaaat gtatagggga acttggtggg cactgtctat tatggggtag ctgtgtggaa 540
aagaagcaaa actactttat tctgtgcatc agatgctaaa gcttatgaga aggaggtgca 600
taaatctctg gctacacatg cctgtgtacc cacagacccc aaccacaaag agatggattt 660
agtaaatgta acagaaaaatt ttaacatgtg gaaaaatgac atgggtggatc agatgcatga 720
ggatgtaatc agttttatgg atcaaaagct aaagccatgt gtaaaagtga cccactctg 780
tgtcacctta aactgtagta aggttaccac taatgctact tacaataata ctgatgatat 840
aaaaaattgc tcttttaata caaccacaga aataagagac aagaaacgca aagagtatgc 900
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tagtgagtac atatttaataa attgtaatac ctcaaccata acacaagcct gtccaaaggt 1020

SEQ 94

174 6

ctcttttgcg	ccaattccta	tacattattg	tgctccagct	ggttttgcga	ttctaaagt	1080
taaagatgag	acattcaaat	ggacaggacc	atgcaaggag	gtcagtagac	tacaatgtac	1140
acattggaat	aagcagctgg	tatcaactca	actactgtta	aattggtagca	cagcagaaaa	1200
agagataata	actagatctg	aaaaataaac	agacaatgca	aaaactataa	tagtacctct	1260
taatgaatcc	ataaaaattg	tatgtacaag	acccaacaat	aacacaagaa	aaagtataag	1320
gataggccca	ggacaagcat	tctatgcaac	aaacggcata	ataggagaca	taagacaagc	1380
acattgtaac	attagtgaat	ctaactggac	taaaacttta	caagaggtag	gaaaaaaatt	1440
agcaaaagca	ttctctaata	aaacaataag	tttcaaccaa	tcctcaggag	gggacctaga	1500
aattgttaaca	catagcttta	attgtggagg	agaattcttt	tattgttaata	catcaagaact	1560
gttttaacggt	acatacaaat	gtacagacat	gcctacatac	aattggtacaa	attccagttc	1620
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acgagcaatg	tatgcccttc	ccattgaagg	aaacataaca	tgtgaatcaa	atatacacagg	1740
actactatta	gtactgtatg	gaggcgacac	aaatagtagc	acagagatat	acagacctgg	1800
aggaggagat	atgagggaca	attgtgagaag	tgaattatat	aaatataaag	tggtagaagt	1860
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ccagcaggaa	caaaatggaa	aagattttatt	agcattggac	agttggcaaa	atctgtggaa	2400
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cttgatagtg	ttgagataaa	tttttgctgt	gctatctata	gtaaatagag	taggacagag	2520
atactcacct	ttgtcgttgc	agacccttac	cccagaccgg	agggaaaccg	acagggtcag	2580
aggaaatcgaa	gaagaagggt	gagagcaaga	caaagacaga	tccattcgat	tag	2633

<210> 105

<211> 2651

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=rev

<400> 105

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gattaggagat	aggagcatta	atagtagcat	taactcttagc	aataatttgg	tgggaccatag	180
catatctaga	ataataggaaa	ttgttaagac	aaagaaaaat	aaacaggttta	attgaaagaa	240
ttagggaagag	agtagaagac	agtggcaatg	agagtgaggg	ggatactgag	gaattgtcaa	300
cactgtgtgga	tatggggaat	cttaggcttt	tggatgctaa	tgatttataa	tgtagtaggg	360
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ttctgtgcat	cagatgctaa	agcttatgag	aaggaggtgc	ataatatctg	ggctacacat	480
gacctgtgtac	ccacagaccc	caacccacaa	gagatggatt	tagtaaatgt	aacagaaaat	540
tttaacatgt	gaaaaaatga	catggtggat	cagatgcatg	aggatgtaat	cagtttatgg	600
gatcaaaacc	taaaagccat	tgtaaaagtg	accccaactc	gtgtcaactt	aaactgtagt	660
aaggttacc	ataatgctac	ttacaataat	actgatgata	taaaaaattg	ctctttttaa	720
gcaaccacag	aaataagaga	caagaaacgc	aaagagtatg	cactgtttta	tagactcgat	780
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aattgttaata	ccctcaacct	aacacagacc	tgctccaaag	ttctctttga	ccccattctc	900
atacattatt	gtgtccagc	tggttttgcg	attctaaagt	gtaaaagtag	gacatttcaat	960
gggacaggac	catgcaagga	ggtcagtaca	gtacaattga	cacatggaat	taagccagtg	1020

SEQ 95

175

G

gtatcaactc	aactactgtt	aaatggtagc	acagcagaaa	aagagataat	aactagatct	1080
gaaaaatata	cagacaatgc	aaaaactata	atagtacatc	ttaatgaatc	cataaaaaatt	1140
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tgacagataa	ggcaatttat	aaacatttgg	cagaaggtag	gacgagcaat	gtatgccctt	1560
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gacgatctac	ggagcctgtg	cctcttcagt	tgccaccgat	tgagagactt	catatttggt	2580
gcagcgagag	cggtggaact	tctgggacgc	agcagttcca	ggggactaca	gagggggtgg	2640
gaagccctta	a					2651

<210> 106

<211> 261

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=vpu

<400> 106

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ttaactttag	caataattgt	gtggaccata	gcatacttag	aatataggaa	attgttaaga	120
caaagaaaaa	taaacagggt	aattgaaaga	attagggaaa	gagtgaaga	cagtggaact	180
gagagtggag	gggatactga	ggaattgtca	acactgggtg	atatggggaa	tcttaggctt	240
ttggatgcta	atgatttata	a				261

<210> 107

<211> 2574

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=env

<400> 107

atgagagtga gggggatact gaggaattgt caacactggt ggatatgggg aatcttaggc 60

SEQ 96

176 G

ttttggtatgc	taatgatatta	taatgtagta	gggaacttgt	gggtcacagt	ctattatggg	120
gtacctgtgtg	ggaagaagac	aaaaactact	ttattctgtg	catcagatgc	taaagcttat	180
gagaaggagg	tgacataaat	ctggggctaca	catgcctgtg	taccacacag	ccccaccca	240
caagagatgg	atttagtaaaa	tgtaacagaaa	aatttttaaca	tgtggaaaaa	tgacatgggt	300
gatcagatgc	atgaggatgt	aatcagttta	tgggatcaaa	gcctaaagcc	atgtgtaaa	360
ttgacccac	tctgtgtcac	tttaactgt	agtaagggtta	ccaataatgc	tacttacaat	420
aatactgatg	atataaaaaa	ttgtctcttt	aatgcaacca	cagaaataag	agacaagaaa	480
cgcaaaagat	atgcactggt	ttatagactc	gatatagtac	cactaaatga	gaataagaac	540
agctctagta	actatagatga	gtacatatta	ataaattgta	atacctcaac	cataacacaa	600
gcctgtccaa	aggtctcttt	tgaccacaatt	ccatatacatt	attgtgctcc	agctgggttt	660
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acaaattcca	gttcagacat	catcatgctt	ccatgcagaa	taaggcaatt	tataaacatt	1260
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gctgtgcctt	ggaactccag	ctggagtaat	aaatcaaaa	atgatatttg	gaataaacatg	1860
acctggatgc	agtgggataa	agagattagt	aattacacaa	acacaatata	ccggttgctt	1920
gaagaatcgc	aaatccagca	ggaacaaaat	gaaaagatt	tattagcatt	ggacagttgg	1980
caaaatctgt	gaaattggat	tagcataaca	aaatggctgt	ggtataataa	aatattcaat	2040
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cccgcagcgg	tcagaggaaat	cgaagaagaa	ggtggagagc	aagacaaaag	cagatccatt	2220
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atacaaatg	ctgagcagca	agataggatt	atagaattta	cacaaagaat	ttgcagagct	2520
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<210> 108
 <211> 624
 <212> DNA
 <213> Human immunodeficiency virus type 1

<220>
 <223> isolate=94IN476.104; gene=nef

<400> 108
 atggggagca agatgtcaaa aagcagaata gttggatggc ctgagggtaag agaaagaatg 60
 aggagaactg agccagcagc agagggagta ggagcagcat ctcaagactt agctaaacat 120

SEQ 97

177

6

ggagcactta caaccagcaa cacaccaagc aataatgctg ctgggtgcctg gctgcaagcg 180
 caagaggagg aagaagaagt aggcctttcca gtcagacctc aggtgccttt aagaccaatg 240
 acttataaag gagcattcga tctcgccttc tttttaaaag aaaagggggg actggatggg 300
 ttaatttact ctaagaaaag gcatgaaatc cttgatttat ggggtttataa cacacaaggc 360
 tacttcctcg attggcaaaa ctacacacca ggaccagggg tcagatatcc actgaccttt 420
 ggatgggtgct acaagctagt accagttgac ccaagtgtag tagaagaggc caacaaagga 480
 gaaaacaact gtttgctaca cccatgagc caacatggaa tggatgatga agatggagaa 540
 gtattaaagt ggcagtttga cagcagccta gcacgcagac acatagcccc cgagctacat 600
 cgggagtatt acaaagactg ctga 624

<210> 109
 <211> 17
 <212> DNA
 <213> artificial sequence

<220>
 <223> Upstream primer UP1A spanning tRNA primer binding state

<400> 109
 agtggcgccc gaacagg 17

<210> 110
 <211> 22
 <212> DNA
 <213> artificial sequence

<220>
 <223> Downstream primer Low2 spanning the R/U5 junction in the
 3' long terminal repeat

<400> 110
 tgaggcttaa gcagtggtt tc 22

<210> 111
 <211> 28
 <212> DNA
 <213> artificial sequence

<220>
 <223> Upstream UP1AMlul primer containing Mlul restriction site

<400> 111
 tctctacgcg tggcgcccga acagggac 28

<210> 112
 <211> 35
 <212> DNA
 <213> artificial sequence

<220>
 <223> Downstream LowlMlul primer containing Mlul restriction site

<400> 112
 accagacgcy tacaacagac gggcacacac tactt 35

SEQ 98

178 6